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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,047	01/31/2001	Osamu Furukawa	201210US-2 DIV	3109

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EXAMINER

BUDD, MARK OSBORNE

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 02/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
774047Applicant(s)
Furukawa et alExaminer
M. BuddGroup Art Unit
2834

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 1-15-02.
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 166-171 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 166-171 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☒ Notice of References Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 166-169 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan (62-98340).

Japan teaches a circuit board #13 with conductors #14, #15 that have thicker portions #14a, #15a at the connection areas. A SAW (including acoustic absorber #7 is flip-chip mounted onto the circuit board and the gap between the board and the SAW is sealed (#16, #17). An additional connecting element #18 can be provided between the board wiring and the SAW connection pads if desired. The sealing member provides an internal space that is defined by the volume not filled by #16, #17; thus it does not intrude into this space. Not that the and to alone prevent the sealing member from spreading into the space portion" is merely a statement of desired function and does not actually define any structure. As described above, #16, #17 of Japan actually performs the function, anyway. Note further that the claim does not explicitly exclude sealing material from being within the space. Japan does not teach the specific air gap thickness, however as pointed out in the first office action selection of specific dimensions is within the skill expected of the routineer. Obviously a gap large enough to allow the surface wave propagation is necessary. Other than that, the size is largely irrelevant to the finished

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device and would be determined by factors as e.g. use of ultrasonic banding, reflow soldering or other bonding methods, the materials selected, thickness of the absorbing material etc., All mundane routine design considerations. Note that the portion of the circuit board that includes #14a, #15a is considered the relatively thicker portion and the rest of the board is considered as the relatively thinner portion. That is to say, the language of claims 168, 169 provide for the wiring pattern to be part of the circuit board.

Claims 170 and 171 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi or Nishio in view of Japan (62-98340).

Nishio (Figs. 1-3) and Onishi teach a SAW flip-chip mounted to a circuit board via conductive bumps and the space between the board and the SAW is sealed. They do not explicitly teach using an acoustic absorber, and only a single "bump" is provided for each connection. However, providing an element for its known, expected benefit would have been obvious to one of ordinary skill in the art. Thus to provide the absorber of Japan to either Onishi or Nishia to prevent reflected waves would have been obvious to one of ordinary skill in the art. Providing the "bump" as several small layers rather than one thickener layer is likewise considered to be within the skilled expected of the routineer. Note e.g. Japan provides the seal as either a single layer #16 in Fig. 2 or as two layers #16, #17 in fig. 3. Layers may be preferred for example to allow use of different desirable materials. Note that when using ultrasonic bonding or reflow soldering any multiple layers on 'bump' would lose their identity in the finished product.


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THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Budd/ds

02/16/02


MARK Y. BUDD
PRIMARY EXAMINER
ART UNIT 212